ADVANCED TECHNOLOGY PROGRAM

The Advanced Technology Program: Innovative Technology Solutions Through Industry-led Public Private Partnership

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ATP's Mission

To accelerate the development of **innovative technologies** for **broad national benefit** through **partnerships** with the private sector.

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Sixteen Years of Innovation

Drug Discovery Technologies

DNA Diagnostics

DVD

HDTV

Fuel Cells

Homeland Security

Biomanufacturing

Aquaculture

Tissue Engineering

Discrete Manufacturing

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ATP Historical Funding Mechanisms

<u>Open or General Competitions</u>

- Competitions since 1991

<u>Focused Programs</u>

- Industry-led cooperative programs in several key technology areas
- Conducted in ‘94, ’95, ’97 & ‘98

ATP: Process At-A-Glance

- Funding source of “last resort”
- Focus is on high-risk, high-payoff civilian technology development
- Well-established processes for proprietary handling of proposals
- Proven peer-review system
- Document control, Human & Animal subjects, Legal and Grants support
- Evaluation of multidisciplinary proposals
- Value-added project management

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ATP Selection Criteria

50% **-** Scientific and Technological Merit

50% - Potential for Broad-Based Economic Benefits

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ATP Selection Criteria

Scientific and Technological Merit (***50%***)

- Technical Rationale
  - Technological innovation
  - High technical risk & feasibility
- R&D Plan

Potential for Broad-Based Economic Benefits (***50%***)

- Economic Benefits
- Need for ATP funding
- Pathway to Economic Benefit

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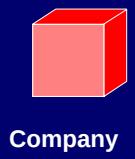
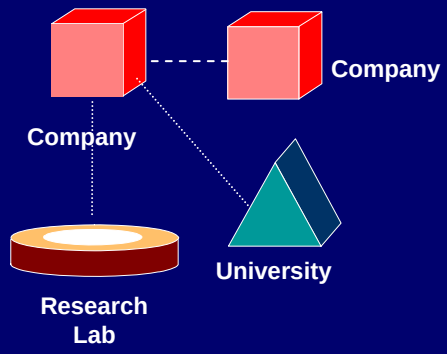
Types of Proposals

As a Single Company:

Alone



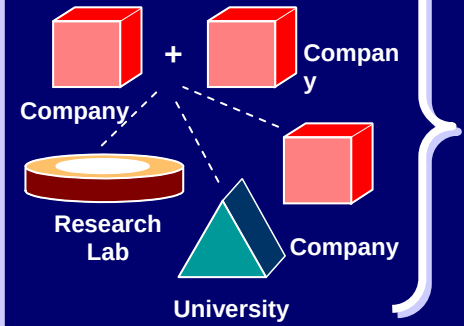
With Subcontractors



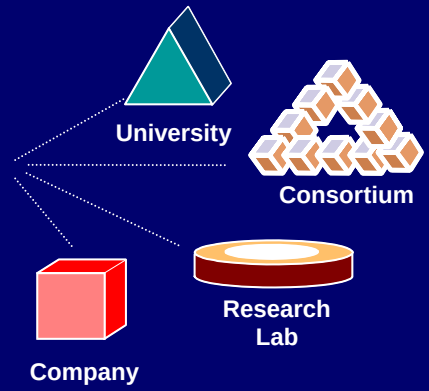
- For-profit company
- 3-year time limit
- $2M award cap
- Company pays indirect costs
- Large companies cost share at least 60% of total project cost

As a Joint Venture:

Formal Alliances



With Subcontractors



- At least 2 for-profit companies
- 5-year time limit
- No limit on award amount (other than availability of funds)
- Industry share >50% total cost

- ***ATP encourages teaming arrangements***
- ***Most projects involve alliances***

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Last Review Process

PROPOSALS

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SCREENING

↓

CLASSIFICATION

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Gate 1: FULL TECHNICAL PLAN + PRELIMINARY ECON/BUS PLAN

TECHNOLOGICAL MERIT

- Technical Rationale
  - technological innovation
  - high technical risk & feasibility
- R&D Plan

ECONOMIC/BUSINESS MERIT

- National Economic Benefits
- Need for ATP Funding
- Pathway to Economic Benefits

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Gate 2: FULL ECONOMIC/BUSINESS PROPOSAL + BUDGET INFO

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Gate 3: SEMIFINALISTS IDENTIFIED

- Oral review

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Gate 4: AWARD → **Cooperative Agreement**

DEBRIEFING

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Gate 1: Complete Technical Plan

- Fully address “scientific and technological merit” selection criterion
  - **Technical Rationale**
    - **technological innovation**
    - **high technical risk & feasibility**
  - **R&D Plan**
- Single company -- **20 pages max**
- Joint venture -- **30 pages max**

Innovation at ATP

- Unique approach to developing new-to-the-world prototypes of
  - Products
  - Processes
- Approach can be
  - Completely new
  - Novel integration of existing or new technologies

Technological Innovation at ATP

Revolutionize the State-Of-The-Art

- Better
- Cheaper
- Faster
- “Disruptive”

Revolutionary – Not Evolutionary

Project Deliverables – Not Product Development

- Platform multi-use technologies
- Prototype new tools
- Prototype new processes
- Prototype new products

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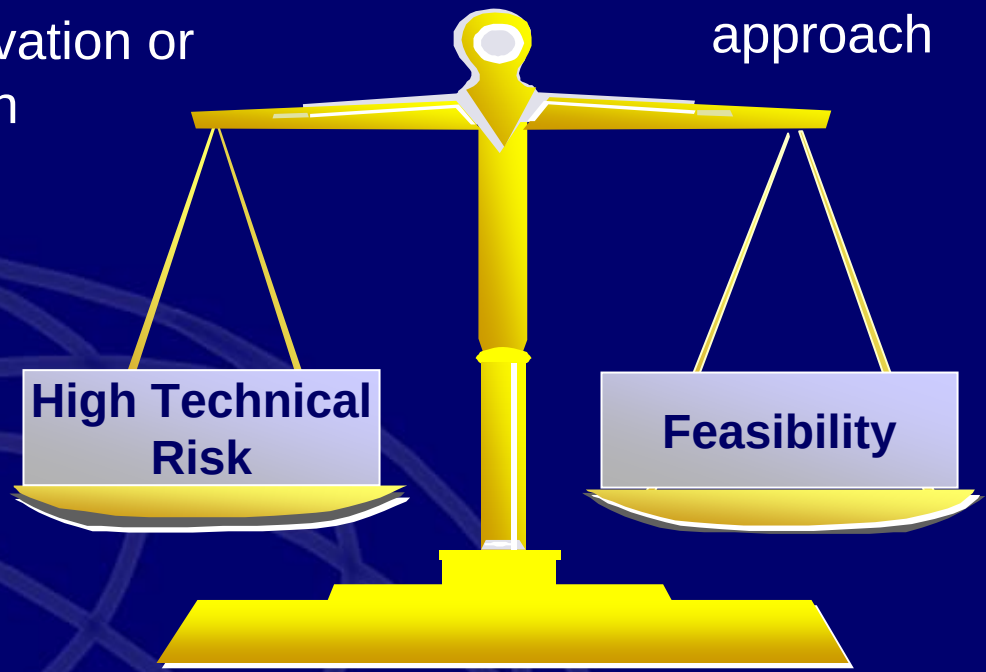
High Technical Risk And Feasibility

High Technical Risk

- technical challenges
- significant uncertainty of success
- risky innovation or integration

Feasibility

- sound scientific foundation
- sound engineering approach



ATP proposals balance both!

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R&D Plan

How will you achieve your goals?

Essential Elements of a Quality R&D Plan

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Gate 2: Complete Economic/Business Plan

- Fully address “potential for broad-based economic benefits” selection criterion
  - **National Economic Benefits**
  - **Need for ATP Funding**
  - **Pathway to Economic Benefits**
- Single company -- **15 pages max**
- Joint venture -- **20 pages max**

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National Economic Benefits

ATP Perspective

ATP cares about net benefits for the nation

Private Investor Perspective

Private investors care about near term return on their investment

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Need for ATP Funding

What market opportunity will be missed without ATP funding?

Why does the project need public funds?

- Is the project “too risky” to obtain private or internal funding?
- Where else have you looked for funding and why were you turned down?

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Pathway to Economic Benefits

What is your **strategy**, **plan**, and **project structure** for realizing national economic benefits?

Commercial-ization Plan and Strategy

Spillovers and Broader Diffusion

Commitment Organizational Structure & Management

Experience and Qualifications

U.S. Economic Growth

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Gate 3: Semifinalist

- **Semifinalist**, invited to NIST for an oral review, and may be asked to provide written responses to questions for clarification

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Gate 4: Award

- If selected, an award is made
- A cooperative agreement is issued by the NIST Grants Officer

ATP Adult Stem Cell Project Awards

Cytomatrix, Inc. – 1999 - T Cell Production in an Artificial Thymus

Osiris Therapeutics, Inc
1997 -Cardiac Muscle Regeneration Using Mesenchymal Stem Cells
1998 -Bone Regeneration Using Allogenic Mesenchymal Stem Cells
2002 - Neural Regeneration with Mesenchymal Stem Cells

ACT Group, Inc. – 2003 - Transdifferentiation of Adult Somatic Cells

RheoGene, Inc. – 2004 - Novel Technologies for Adult Stem Cell Therapeutics

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ATP Adult Stem Cell Project Awards

Aastrom, Inc, 1992 - Human Stem Cell and Hematopoietic Expansion Systems

Progenitor, Inc - 1994 - Application of Gene Therapy to Treatment of Cardiovascular Diseases

Automated Cell, Inc – 1997 - Combinatorial Cell Culture: Tool Development and Application to Human Stem Cell Growth

Alexion Pharmaceutical Inc. – 1997 - Xenogeneic Cartilage Transplantation

Revivicor, Inc. – 2000 - Autologous Stem Cell Production

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Project Management Basics

- Project Management Team
  - Technical specialist
  - Business specialist
  - Grants specialist
- Technical Reports
  - Quarterly reports
  - Final technical report
- Annual Business Reports
- Financial Reports
- Formatted Business Reports
- Human & Animal Subjects
- Managing Change
  - Advance approval for >10% change of currently approved annual budget
  - Changes to approved tasks require criteria integrity

Project Management Values

Objectives

- Maintain fidelity to original proposal and cooperative agreement governing the award
- Continued fidelity of project to its original merit against ATP selection criteria
- Monitor progress through reports and other communications
- Monitor technological and business environments
- Company makes all business decisions

Project Management Pointers

- Avoidable Issues
  - Not reading and knowing the rules
  - Bad assumptions – Human & Animal Subjects
  - Inaccurate accounting
  - Technical or Budget changes without prior approval

- Unavoidable Issues "let's talk"
  - Key Personnel leave
  - Subcontractor issues
  - Bankruptcy
  - Company is sold
  - Company is sold and doesn't want the grant
  - Company is sold to foreign entity

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Sixteen Years of Innovation

- Since 1990, 44 competitions
  - 6,924 proposals, $14.7 billion requested from ATP
- 768 projects awarded
  - 1,511 participants and >1500 subcontractors
- $4.4 billion of high-risk research funded
  - *ATP share > $2.3 billion*
  - *Industry share > $2.1 billion*
- Small businesses are thriving
  - *66% of projects led by small businesses*
- Over 1,100 patents from ATP projects

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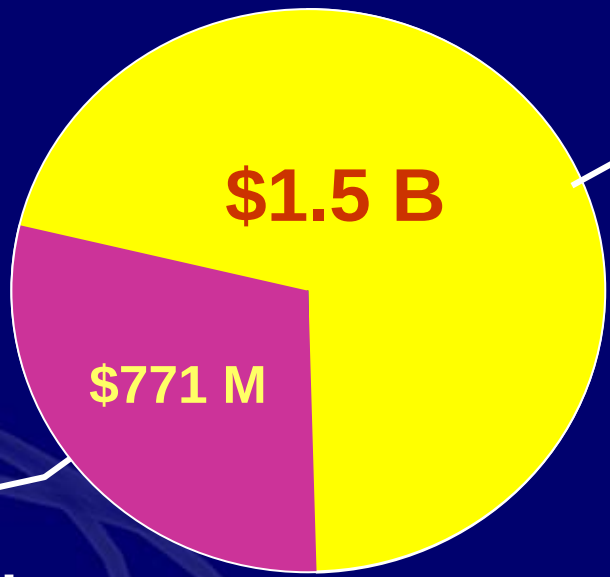
768 ATP Award Funding Breakdown

(As a Percent of $2.3 B Awarded)



NIST

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Stimulating U.S. Economic Development

ATP accelerates technology development

- 86% of project participants report that they are ahead in their R&D cycle as a result of ATP funding
- Over half said that they are ahead by 1 to 3 years

ATP fosters collaboration

- 85% of projects engaged in collaborations with other companies, universities and federal labs

ATP Published Studies - http://www.atp.nist.gov/eao/eao_pubs.htm

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Stimulating U.S. Economic Development

Considerable evidence ATP is achieving its objectives

- Increased rates of innovation
- Broadly enabling technology platforms
- Commercialization by U.S. companies
- Improved competitiveness of U.S. industries
- Broadly distributed economic benefits from large spillovers
- Increased collaborations
- Strong small business participation
- ATP a strong causal factor—leveraging, not substituting

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For Info on ATP and to Join Our Mailing List . . .

- Call toll-free: 1-800-ATP-FUND (1-800-287-3863)
- Fax your name and address to: 301-926-9524
- Send e-mail to: ***atp@nist.gov***
- Visit ATP's website: ***http://www.atp.nist.gov***

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Thank You